NATIONAL PARK SERVICE

RANGER ACTIVITIES DIVISION
FIRE MANAGEMENT PROGRAM CENTER

OVERVIEW OF FIREPRO PROGRAM PLANNING AND BUDGET ANALYSIS SYSTEM

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FIREPRO GOALS

FIREPRO is an automated fire management budget planning and programming system developed by the National Park Service. It is designed to quantify the Most Efficient Level (MEL) financial support requirements for fire management activities at all organizational levels through common analyses of workload and program complexity. MEL is defined as the minimum level of staffing and program support that will achieve program performance targets for wildland fire preparedness, hazard fuels reduction, and restoring the natural role of fire to achieve resource management objectives. FIREPRO program performance targets are not based on a marginal cost analysis system, because the National Park Service mission is centered on land stewardship and public enjoyment of the resource rather than on resource utilization and commodity valuations. The National Park Service does not attempt to establish dollar values for resources lost to wildfire, such as historic buildings, archeological sites, endangered species and special biological communities.

Program performance targets are as follows:

- Achieve 95 percent success in initial attack on wildfires in the normal year. The normal year is the third highest occurrence year in the past 10 years of record. The success rate for each park is evaluated, and the analysislogic is changed to correct deficiencies, especially deficiencies experienced by parks with similar workload and complexity profiles.

- Ability to carry out all hazards fuels reduction projects ranking above the 25th percentile according to resources at risk criteria. These projects are judged to be effective in significantly mitigating hazards and reducing long-term suppression expenditures. Hazardous fuels are those that, when ignited, threaten public safety, structures and facilities, cultural and natural resources, natural processes and to permit the spread of wildland fires across administrative boundaries, except as authorized by agreement.

- Capability to successfully monitor and manage all wildland fire use fires with NPS monitoring resources, according to prescription requirements for each park program.

- Ability to successfully carry out all prescribed fires ranking above the 25th percentile according to ecosystem benefit criteria. These high-ranking projects will significantly contribute to maintaining ecosystem health and prevent hazardous fuels from developing. In addition, all projects must pass a statistical cost reasonableness screen. This screen identifies projects that fall statistically within acceptable cost variance. This screen is also applied to hazardous fuel reduction projects.

- Ability to monitor the short and long-term effects of all prescribed fire programs to ensure that goals and objectives are being achieved, and to provide feedback into the adaptive management process.

- Maintain adequate permanent staff to provide planning and oversight for all phases of park, cluster, support office, and regional fire management programs. The FIREFIRO analysis identifies the type, number, and location of permanent staffing needs for program management in both suppression preparedness and prescribed fire management. It also identifies the type, number, and location of temporary staffing needs for initial attack preparedness, wildland fire use monitoring, fire effects monitoring, prescribed fire, and other types of hazard fuel reduction projects.

- Ability to provide qualified personnel to meet internal incident management requirements for overhead teams.

- Ability to provide aircraft and fire engine support for initial and extended attack wildfire suppression operations, and for prescribed fire operations. This performance target includes maintaining a working capital fund to amortize and replace fire engines.

- Ability to fund all requirements for interagency shared preparedness resources.

Optimal national and support office programs are determined by the scope and complexity of programs at the park level.

Program needs are prioritized by means of workload and complexity point scores for each organizational unit, risk scores for hazard fuel reduction projects, and benefit scores for ecological prescribed burning. The total funding and FTE needs for staffing, program support, and project management is the overall program target. Any funding and FTE deficiencies in the current year appropriation are used to formulate out-year budget requests.

PRINCIPLES OF FIREPRO

FIREPRO is based on the following principles of fire program management:

- Permanent and seasonal staffing should be based on the normal year workload and the complexity of the fire program at all organization levels.

- Workload and complexity should be measured by common standards applied to individual programs. Workload is measured by key indicators such as the number of wildfires, length of fire season, the number of prescribed fires, and the annual acres burned or planned for prescribed fires. Program complexity is measured by key indicators such as resources at risk from wildfire, the burning conditions under which most fires burn, fuel types, the probability of prescribed fire escape, the risk to resources from an escape, smoke impacts, and the difficulty of achieving desired fuel reduction objectives.

- The normal fire year is an appropriate standard for measuring program workload, and that the normal year will be calculated separately for prescribed natural fire and wildfire. The normal wildfire year is the year with the third highest number of wildfires in the past ten years of record. The normal wildland fire use fire year is the year with the third highest number of acres burned by wildland fire use in the past ten years of record. Programming is based on the normal rather than the greatest workload year because it is not cost effective to staff "up front" for the worst case scenarios in fire management. In most cases the relationship between fire occurrence levels in different years is not a linear one. For example, in Yosemite, which has the highest wildfire occurrence of any park, the highest year had about twice as many wildfires as the third highest. Wildland fire use fires follow a similar pattern. Staffing for the worst case scenario would cost about twice as much as the current program, with minimal added value in most years. Some wildfires will always escape initial attack under severe weather and fuel moisture conditions, or where unnaturally severe fuel conditions exist.

- In worst case years, the National Park Service relies on the interagency pool of firefighting resources, and inter-park and inter-regional wildland fire use resources. Interagency agreements provide for such sharing of resources, based on the philosophy that not all agencies will be above the normal year during the same year. Prescribed fire projects are the exception to the normal fire year logic. The NPS must be capable of fully staffing and funding all approved projects since these are planned events.

- The most efficient program level should be based on an analysis of both wildfire and prescribed fire workload and complexity. Hazard fuels reduction is, in many cases, as important or more important than additional firefighting resources in reducing suppression costs and resource losses.

- A 95 percent success target for initial attack represents the point of diminishing returns for preparedness staffing. Since some wildfires will occur under extreme conditions, and others will occur in large clusters of up to 40 at one time in a single park, it is impractical to expect all initial attacks to be successful. The 95 percent level has not been tested empirically as the MEL, but there is general consensus among firefighting agencies that a success rate much above this level would require a vast increase in preparedness resources that would not be needed in most years.

- Wildland fire use monitoring and management requirements are set at the 100 percent level because these resources cannot presently be drawn from an interagency pool as

easily as suppression resources. During above normal years, parks can utilize resources from other parks and from the inter-regional fire use modules, and prescribed fire support teams funded through FIREPRO.

- Hazard fuels reduction and ecosystem maintenance prescribed burning projects lower the target levels for suppression preparedness resources and reduce overall program cost. The relationship between hazard fuels reduction and wildfire suppression cost savings has not been established empirically. Until this can be done, the NPS supports an interim policy of including those projects that will reduce significantly the risk to resources as part of the MEL program. Hazard fuels reduction and ecological prescribed burning projects from all parks are ranked based on common risk and benefit criteria.

- The National Park Service should be able to provide qualified incident overhead team personnel to meet the incident workload requirements of the past 5 years.

- Aircraft and engine support requirements should be based on the number, accessibility, and burning characteristics of wildfires.

- FIREPRO analyses should be designed to identify baseline staffing needs and funding support requirements, but the programming system should remain responsive to unusual needs that might fall outside the bounds of the baseline analyses. Since no model or analysis formula can accommodate the full range of baseline needs, management must be able to override the analysis in some cases.

FUNCTIONAL AREAS COVERED BY FIREPRO

The FIREPRO analyses determine program staffing and budget support requirements for the following functional areas of fire management:

- permanent and permanent-less-than-full-time staffing for program management and oversight

- national coordination and support

- regional and SO coordination and support

- temporary staffing and support for wildfire initial attack

- project funding for ecological prescribed burning

- project funding for hazardous fuel reduction

- temporary staffing and support for wildland fire use management

- temporary staffing and support for fire effects monitoring

- training
- capital equipment
- interagency shared resources

STRUCTURE OF THE FIREPRO ANALYSES

Permanent Staffing In Parks: FIREPRO identifies the optimum permanent staffing needed to oversee fire management activities identified in park fire management plans. For parks the analysis criteria include:

- The number of wildfires in the normal year
- The length of the fire season (defined as the cumulative 10-day periods during the year when a park experiences at least 10 unplanned ignitions based on ten years of record).
- Values to be protected from wildfire, including real property and special resources (*e.g.* threatened or endangered species, historic structures, archeological resources, and endangered ecosystems)
- The average acres prescribed burned in the top five of the past seven years and the complexity level of these prescribed burns
- The acres burned by wildland fire use in the normal year and the complexity level of these wildland fire use fires
- The potential acres that could be burned by wildland fire use fire in one year.
- The average annual acres of mechanical fuels treatment in the last five years.

Based on the analysis, parks may qualify for some or all of the following positions:

Fire Management Officer
Wildfire Specialist
Prescribed Fire Specialist
Air Operations/Equipment Technician
Prescribed Fire Technician
Fire Dispatcher
Fire Program Assistant/Administrative Technician
Biological Technician

Preparedness Staffing and Support For Wildfire Initial Attack: This program element includes seasonal firefighters required to satisfy initial attack needs during the normal wildfire year along with the supplies, non-capital equipment and other costs of supporting the seasonal initial attack function. A separate analysis is performed for each FIREPRO park. Analysis criteria include:

- Number of wildfires in the normal fire year
- Primary fuel model associated with the base weather station
- 90th percentile of the burning index derived from the base weather station
- Length of the fire season

The number of wildfires determines the number of initial attack responses required during the fire season. The primary fuel model and the 90th percentile of the burning index are indicators of the potential wildfire severity, which determines the number of firefighters required to stage a successful initial attack. The length of the fire season determines the length of time FIREPRO will support the initial attack operation. Wildfires that occur outside of fire season must be managed by other permanent and/or seasonal staff qualified in wildfire suppression.

FIREPRO determines the number of firefighters and length of seasonal employment from the above criteria. The grade levels of these firefighters are determined from a table that displays the relationship between the number of authorized positions and array of grade levels. The grade level array is used by the analysis to calculate funding for salaries and benefits. Parks are not required to hire the exact number and grade levels of firefighters identified by the analysis, but must remain within the calculated funding and FTE limits. Program support funding is calculated as a percentage of base salaries and benefits.

All FIREPRO parks that fail to qualify for seasonal firefighters may still receive funding for fire cache supplies and equipment. FIREPRO parks are those subject to wildland fire, even if only on an occasional basis.

Wildland Fire Use Management: This element includes seasonal staff and support required to monitor prescribed natural fires and to perform holding actions necessary to keep wildland fire use fires in prescription. Analysis criteria include:

- Number of wildland fire use fires in the normal year
- Average complexity score for wildland fire use fires occurring in the normal year
- Average size of wildland fire use fires occurring in the normal year
- Total number days during which wildland fire use fires were burning in the normal year
- Length of the wildland fire use fire season

FIREPRO determines the number of seasonal monitors and length of seasonal employment from the above criteria. The grade levels of these monitors are determined from a table that displays the relationship between the number of authorized positions and array of grade levels. FIREPRO calculates funding needs for routine daily operational requirements, such as vehicle rental, telephones and supplies and materials as a percentage of the base salary and benefits. These funds are allocated directly to parks.

Fire Effects Monitoring: Parks using prescribed burning are required to conduct short and long-term fire effects monitoring to determine changes and trends in fuel loading and vegetative composition through time. Although some of these changes may be subtle, they may be critical

indicators of whether the prescribed burning program is meeting its goals and objectives. Analysis criteria include:

- Number of fire effects monitoring plots to be re-surveyed each year stratified by fuel model
- Number of fire effects monitoring plots to be established each year stratified by fuel model
- Miles of road in the park
- Acres in prescribed fire zone

FIREPRO determines the number of fire effects seasonal monitors and length of seasonal employment from the above criteria. The grade levels of these monitors are determined from a table that displays the relationship between the number of authorized positions and array of grade levels. FIREPRO calculates funding needs for routine daily operational requirements, such as vehicle rental, telephones and supplies and materials as a percentage of the base salary and benefits. These funds are allocated directly to parks.

Permanent Less-Than-Full-Time Staffing: The growing complexity of fire management programs has required a great increase in training and skills for fire personnel. It has become increasingly evident that the Service cannot continue to attract the necessary skilled personnel nor maintain program continuity without providing the longer employment period and benefits associated with permanent less than full time positions (PLFT).

FIREPRO identifies key seasonal positions that should be converted to PLFT based on the following criteria:

- Supervision of complex equipment, such as helicopters and fire engines
- Supervision of either firefighting or monitoring crews

The analysis then converts these positions to a minimum of 13 pay periods, and increases their benefits accordingly.

The following positions are identified for conversion to PLFT:

Crew Supervisor
Engine Foreman
Lead Prescribed Natural Fire Monitor
Lead Fire Effects Monitor
Helitack Supervisor

Permanent Staffing in Regional and Support Offices: Permanent staff in regional and support offices (SO) are responsible for coordinating fire programs for all FIREPRO parks, providing direct support for parks without permanent fire management staff, and providing intra and inter-agency coordination, including mobilizations for major wildfire emergencies.

For regions/SOs the analysis criteria include:

- Coordination workload
- Number of FIREPRO parks in the region/SO
- Number of permanent, professional fire staff in parks included in the region/SO

Direct Support Workload:

- Normal year number of wildfires in parks without fire management officers
- Length of regional fire season
- Normal year number of acres burned by wildland fire use fire and prescribed burns in parks without fire management officers

Program Complexity

- Total prescribed fire points for all parks within the region/SO cluster
- Number of wildfires larger than 100 acres in the normal year

Regional/Support Office Activities: Regional/SO coordination and support funding needs are determined by individual program requirements and interagency obligations. These include:

- interagency coordination within the region/SO
- site visits to parks for direct oversight, fire management planning and program reviews
- training for all personnel involved in fire overhead team assignments on project wildfires and prescribed burns, and personnel monitoring wildland fire use fires
- interagency shared resources, including retardant bases, smokejumper bases, area coordination centers, aerial fire detection and helicopters for initial and extended attack
- capital equipment needs for parks
- fire cache needs for parks that do not qualify for FIREPRO-funded staffing

National Program Activities: National staffing needs are determined by the workloads associated with administrative support, interagency coordination, training, and program support in the technical areas of prescribed fire, wildfire suppression, training, fire technology and research.

National coordination and support funding is determined by individual program requirements and interagency obligations. These include:

- interagency coordination activities in Washington and at the National Interagency Fire Center in Boise, Idaho
- site visits for park and SO program reviews
- administrative support activities within the agency and Department

- training course development

- task forces to develop and review policy and procedures operation of the Shared Applications Computer System, which hosts the FIREPRO analysis software and other custom fire applications

- maintenance of wide-area communications systems

Analyzing Clusters of Parks: In addition to analyzing individual park, regional and SO needs, parks can be analyzed as part of a cluster under unified fire management administration. The cluster analysis is useful in addressing the needs of small parks that fail to demonstrate the workload and complexity to justify staffing on their own, but which can receive cost-effective program oversight and support as part of a larger group. Currently, 37 clusters comprising 165 parks have been defined.

Analysis of Fuels Management and Prescribed Burning Needs: Project funding for hazardous fuel reduction, ecological prescribed burning and fire effects monitoring is allocated through an individual and multi-project ranking and priority system. Criteria used in the ranking hazardous fuel reduction projects include:

- public safety considerations

- fuel type/fire behavior

- degree of risk to natural resources, cultural resources or natural processes from wildfire starting in the hazardous fuels

- facilities at risk from wildfires starting in the hazardous fuels

- developments or other values at risk outside a park boundary from wildfires starting in the hazardous fuels

- legislative and administrative mandates directing a park to address hazardous fuel problems

Ecological prescribed burning projects are fire management activities designed to enhance the management of natural resources. In some projects prescribed burning is used to simulate, as closely as feasible, the ecological effects of the burning pattern, intensity and timing of natural fires that cannot be allowed to burn because of boundary considerations, air quality concerns or other administrative constraints. Prescribed fire is also used to reestablish or maintain landscapes of cultural significance. These projects are ranked according to the following criteria:

- legislative and administrative mandates directing a park to address the resource problem

- alternatives to prescribed burning available to park managers

- urgency of resource threat if prescribed burning is not performed

- cost growth rate in subsequent years if projects are left unfunded

Ranking scores are used to assign funding priorities for both hazardous fuel reduction and ecological prescribed burning projects. Parks and regional offices may recommend override priorities that are considered in the budget allocation process. Parks are strongly encouraged to group individual projects into multi-project and multi-year plans in order to better analyze the long-term strategic fire and resource planning needs of the area. Once individual projects are defined, they can easily be grouped into a long-term plan through the software. In order to promote long-term strategic planning for fuels management and prescribed burning, approved multi-year plans receive priority for available funding in subsequent years.

Unfunded projects that are defined in the FIREPRO software can be rolled to future fiscal years for continued consideration. This avoids the added workload of re-entering project documentation each year.

Training: FIREPRO funds are used to train personnel to fill overhead positions on wildfire incidents and prescribed fire projects. The development of fire overhead personnel is based on the philosophy that the National Park Service should provide qualified personnel to manage its average incident requirements over the past five years. Training needs are determined by comparing overhead position requirements with the number of personnel currently qualified to fill the various overhead positions.

Parks, SOs and the national program center identify overhead position requirements for various operational levels. Once the requirements have been identified, the overhead needs analysis program within Shared Applications Computer System is used to determine candidates for further overhead development training and to develop training agendas for
these personnel. The software compares overhead needs with the qualifications of the current staff and identifies those personnel who are closest to meeting the desired qualifications. The analysis then identifies the skills and training courses required for selected personnel to achieve the desired performance level.

Capital Equipment: The capital equipment element of FIREPRO is designed to identify major equipment needed for all phases of fire management. These include but are not limited to engines, water tenders, remote automated weather stations, pumps and radios. FIREPRO maintains an inventory on the number, age, performance capabilities, replacement schedule, and working capital fund status for fire engines. This information is used to analyze fire engine requests, and to determine fixed ownership rate payments into the working capital fund. The regions/SO clusters prioritize non-working capital fund capital equipment requests according to a priority ranking system. This system analyzes the performance capability of existing equipment and evaluates whether the equipment is critical for maintaining minimum acceptable program capability.

Fairshare Resources: The National Park Service provides two Type I crews, one Type III helicopter, and operates one air tanker base as primary fairshare resources. It contributes funding to

support a number of resources provided by other agencies, including retardant bases, smokejumper bases, detection aircraft and area coordination centers.

The need for these resources is determined through national and regional interagency coordination, and the National Park Service's fairshare contribution is determined by the percentage of time each resource is used on NPS fires.

Updating MEL and Preparing Out-Year Budget Requests: FIREPRO is updated each year in order to remain responsive to changing fire management workloads. Any differences between the required levels of staffing and funding identified in the current analysis and those available are incorporated into the out-year funding and FTE request from the Department to Congress.

Calculating Funding Requirements: The analysis criteria are used as variables in a series of matrices that determine staffing and support needs. FIREPRO analyses determine the number, type and grade level and employment period of permanent and seasonal positions for all organizational levels. The program then calculates the salary, benefits, COLA and locality pay for each position and calculates the program support funding as a percentage of base salary and benefits. Program support includes items such as vehicle rental, utilities, travel, local training, supplies and equipment and administrative services.

Funding and FTE Management: FIREPRO funds are derived from the Wildland Fire Management Appropriation contained within the Department of the Interior and Related Agencies Act. Fire management funds for all the Interior agencies are appropriated to the Bureau of Land Management, which then apportions funds to each agency based on the Department's budget presentation to Congress. FTE are also allocated separately to the fire program by the Office of Management and Budget. These funds and FTE are separate from the ONPS appropriation, and must be utilized for fire dedicated functions. Expenditures and obligations are reported separately at the close of each fiscal year, and FTE are not counted against ONPS ceilings.

Allocation of FIREPRO Funds: The base FIREPRO analysis is run each spring, and the results are sent to each FIREPRO park. This report displays the permanent and seasonal FIREPRO staffing for each park along with the funding required to support each position. Parks have until the end of July to review the analysis and identify errors or request supplemental funding for special workload requirements falling outside the analysis. During this period, parks also request funding for capital equipment and for hazard fuel reduction and ecosystem management prescribed burning projects.

Final FIREPRO budget decisions are made in September, and a final budget report is sent to each FIREPRO park. This report displays staffing, FTE, support funding, and project funding by account number. The authorized funding for each account is automatically uploaded into Federal Financial System from the National Fire Program Center via a computer program.